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Paris Re-visited

The man-in-the-street sees but little connection between Paris and the foundry industry, yet the manufacturer of castings, be he in Cleveland or Christchurch, must follow carefully just what happens in this, the most beautiful city in Europe. It is not because of the size of the French foundry industry—it only employs about 60,000 people. It is because it possesses the best foundry organisation of industrial countries. Which other country has a headquarters comparable with the Maison de Fonderie at 66, rue Boissière? Which other country can boast of such a rich co-operative research organisation as the Centre Technique? Not only has this concern magnificent headquarters in the Avenue Victor Hugo, but it now possesses, or in the course of construction, seven regional laboratories. These are not for research but for local co-operative control. Somehow, the French have managed to get the small foundry owner to participate in employers' activities to an extent greater than in any other country. "Une grande famille," is the term employed by Mr. Olivier, the president for many years of the Syndicat des Fonderies—the employers' federation. The president, with his eyes directed towards the British delegation, was obviously anxious to enlarge this "grande famille" by every means within his power. He instanced the Paris Foundry High School, where there are 45 students, as being open to all nationalities. He even went so far as to promise to open the doors of the Centre Technique. This we found difficult to appreciate, until later in the day, gossip reached us that a proposition had been put forward for an exchange of technicians between the "Centre" and the B.C.I.R.A. This at least is a good beginning.

It was with sincere regret that we learnt that Dr. Bastien was unable to preside over the meetings of the Association Technique on account of indisposition. He was replaced by Mr. Koehler, the vice-president. As normally the office is for but one year, the blow is indeed a serious one. A great speech was made by Mr. Richard; he is a vice-president of the employers' federation, and he is obviously a man of whom we shall hear much in the future. He has an almost fanatical enthusiasm for the foundry industry and for international co-operation.

There was the first meeting of the International Committee of Foundry Technical Associations, presided over by Mr. Lobstein. He made it very clear that the rules and regulations were sufficiently well stated to exclude all questions of politics providing there was general goodwill animating the work of the Committee. He was re-elected to the chair, and it was left to the Institute of British Foundrymen to choose a president-elect. The next meeting of the committee is fixed for Liège, in September, 1947, whilst, quite provisionally, the first international conference is fixed for Czechoslovakia in 1948. There was another event into which we apparently gate-crashed. This was the presentation to Mr. Pierre Chevenard of a sword of honour as a recognition of his election as Membre de l'Institut—the French equivalent of a Fellowship of the Royal Society. For us, it was something a little more personal than for most, as we were for a short period colleagues during the last war, and later we acted as chaperone during his first visit to England in 1925. He has received a well-merited honour.

The hospitality offered by our French hosts was on a truly generous scale. The repasts were such as were reminiscent of pre-war days, and quite superior to London's best efforts. This is our second visit since the war and the progress, both material and *spirituel*, is obvious. The French are winning the race towards a decent standard of living quicker than we, but they should have more confidence in their currency than is generally apparent.

Contents

Paris Re-visited, 207.—Joint Iron Council, 208.—New Foundry Service Section, 208.—New Catalogues, 208.—C.F.A. Film Strips, 208.—German Technical Reports, 208.—I.B.F. Conference Papers, 208.—Jobbing Work in an Indian Foundry, 209.—Notes from the Branches, 213.—Change of Plan, 213.—Forthcoming Events, 213.—Correspondence, 214.

NEW FOUNDRY SERVICE SECTION

The Development and Research Department of the Mond Nickel Company, Limited, has been regrouped, and in the present organisation a new foundry service section has been formed to enable the practical work done in the past on the use of nickel in cast iron and copper-base alloys, etc., to be continued and extended to the production of steel, aluminium and other types of castings. This section will be in charge of Mr. Frank Hudson, who will be assisted on the ferrous side by Mr. W. W. Braidwood.

It should be pointed out that this rearrangement will be co-operative with the activities of Dr. A. B. Everest, who will still be primarily responsible for all matters dealing with the application of nickel cast iron in industry.

Mr. W. W. Braidwood was until recently foundry manager at the Riddings Works of the Stanton Ironworks Company, Limited, and was previously associated with Babcock & Wilcox, Limited, Renfrew, the Forth & Clyde Steel Foundry (1932), Limited, Kirkintilloch, and the National Steel Foundry (1914), Limited, Leven.

JOINT IRON COUNCIL

The second annual convention of the Joint Iron Council is to be held at the Dorchester Hotel, Park Lane, London, W.1, on November 14.

The programme commences with the reception at 12.30 p.m., followed by luncheon at 1 o'clock. The opening session, at 2 p.m., will consider the report of the executive committee, accounts for 1945-6, etc. This is followed by a talk on "Industrial Health," by G. F. Keatings, industrial medical consultant to the Butterley Company, Limited, and J. A. Aiton & Company, Limited, and subsequently a discussion.

The representatives of the ironfounders and pig-iron manufacturers will separate for discussion of matters of domestic interest. Ironfounders will discuss the man-power problem (Mr. S. H. Russell in the chair); whilst the pig-iron manufacturers will discuss (*a*) co-operative research in the foundry iron industry, with particular reference to the British Iron and Steel Research Association; and (*b*) the policy of the Government *vis-à-vis* the iron and steel industry, with particular relation to the manufacture of foundry pig-irons.

The proceedings will terminate at 5 p.m.

C.F.A. FILM STRIP

"Motor-car Cylinder Blocks by the All Core Method," is the title of the latest addition to the series of educational film strips. In announcing this, the October Bulletin of the Council of Ironfoundry Associations, draws attention to the high standard of photography, which was carried out in co-operation with Morris Motors, Limited. The price of this strip is 5s., and orders, with remittances, should be sent to the Secretary, Council of Ironfoundry Associations, Derbyshire House, Belgrove Street, London, W.C.1.

NEW CATALOGUE

High-frequency Induction Heating.—The Electronic Department of Philips Lamps, Limited, Aboyne Works, Aboyne Road, London, S.W.17, has sent us a well-produced quarto brochure of 20 pages, fully illustrated with line drawings. There are few subjects on which there has been more misconception, and there is a very real need for a brochure of this character, which is intended to explain the elementary principles and applications of the high-frequency induction heating process from the practical point of view of works executives, managers and heat-treatment personnel, as distinct from radio and electrical technicians.

High-frequency heating is not the answer to every heat-treatment problem, but correctly applied it can help to cut costs and increase rates of production. There are some uses, too, where this process can produce results which are not obtainable by other methods of heating. This brochure will help readers to consider ways in which high-frequency induction heating could be of assistance to them. It is available to our readers by writing to the address given above.

I.B.F. CONFERENCE PAPERS

The Institute of British Foundrymen announce that those who desire to offer Papers for presentation to the 1947 annual conference, to be held at Nottingham, in June, should notify the secretary, at St. John Street Chambers, Deansgate, Manchester, 3, as soon as possible. Intending authors should be prepared to submit manuscripts not later than January 1, 1947. It is desirable also that a copy of the Institute's publication, "Notes for the Guidance of Authors of Papers," should be obtained, thus ensuring that manuscripts comply with the recommendations made therein.

PRODUCTION OF IRON POWDER

Mr. Felix L. Levy, a director of George Cohen, Sons & Company, Limited, writes us with reference to the article entitled "Production of Iron Powder in U.S.," which appeared on page 161 of our issue of October 17. "This," he says, "we have read with great interest; may we point out that we are ourselves producing in Great Britain iron powder of a very high purity. This powder is produced electrolytically. Its iron content is very substantially over 99 per cent., and it is in every respect of the highest quality."

THE GOVERNMENT'S STOCK of non-ferrous scrap metals on September 30 was 183,752 tons, made up as follows:—Q.F. cases and muffled S.A.A., 85,658 tons; ingots, 17,993 tons; lead and lead alloy, 1,503 tons; copper and copper alloy, 20,082 tons; zinc and zinc alloy, 12,666 tons; other grades, 45,850 tons. Sales for the two months August and September amounted to 18,286 tons, of an approximate value of £910,000.

JOBBING WORK IN AN INDIAN FOUNDRY*

By S. G. ATHANIKAR

It is proposed to describe the method adopted for moulding a 36-in. dia. bend and a guide vane piece required for a propeller pump as carried out in an Indian foundry. The word "one-off" implies the need

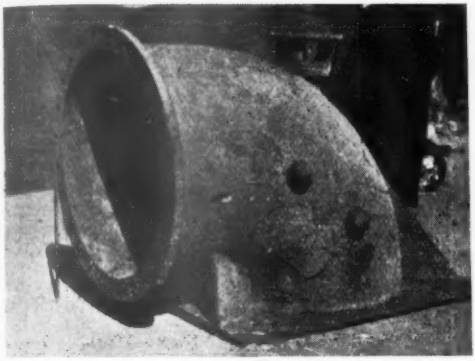


FIG. 1.—BEND PIPE MADE IN LOAM.

for care in spending money on tackle, as all the expense incurred on the pattern and the core box, etc., goes against one casting only. Unlike repetition jobs, more work is left to the moulder and economy must be exercised in the making of the pattern and core boxes.

Figs. 1 and 1a show the bend pipe, which was required to be very strong and therefore was made in

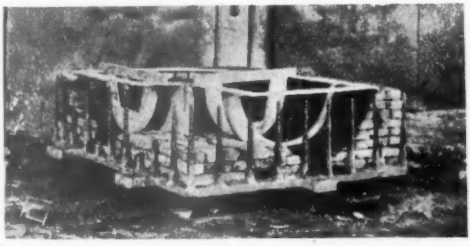


FIG. 3.—BRICKWORK CARRIED OUT IN ROUTINE METHOD.

loam. No expensive pattern was made. As shown in Fig. 2, the tackle consisted of a guide frame A, two half-flanges B and C, two strickles D and E, and one branch F in two halves. The moulding tackle was made up of two rectangular cast-iron plates, 7 ft. 6 in. by 6 ft. 6 in. by 2½ in. thick, one for the drag and the other for the cope. These plates were furnished with a line of prodders all along the edges long enough to reach the joint line of the mould, to prevent the brickwork from bursting during pouring. The cope plate was provided with all the necessary holes for runners, risers, chaplet lockings and also for the bolting up of a support plate. One support plate for the cope, 1 in. thick, having the same overall dimensions as the cope

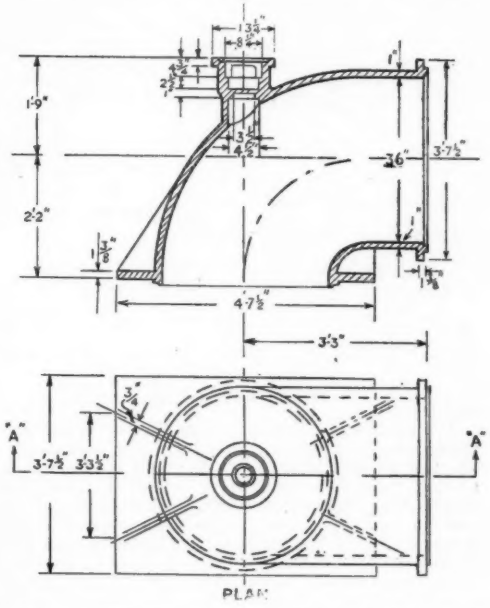


FIG. 1A.—THIRTY-SIX IN. DIA. BEND FOR PROPELLER PUMP.

plate, but with a hole large enough to admit the bend, carried a 1-in. clearance all around, and was located to match with the mould.

The mould, in two halves, was built up on cast-iron plates by sweeping. The direction of the sweeps, against which the brickwork carried out, was guided by the frame A, shown in Fig. 2. The top mould was also built like the bottom one, but with the addition of the support plate.

* A Paper read before the Wales and Monmouth branch of the Institute of British Foundrymen.

Jobbing Work in an Indian Foundry

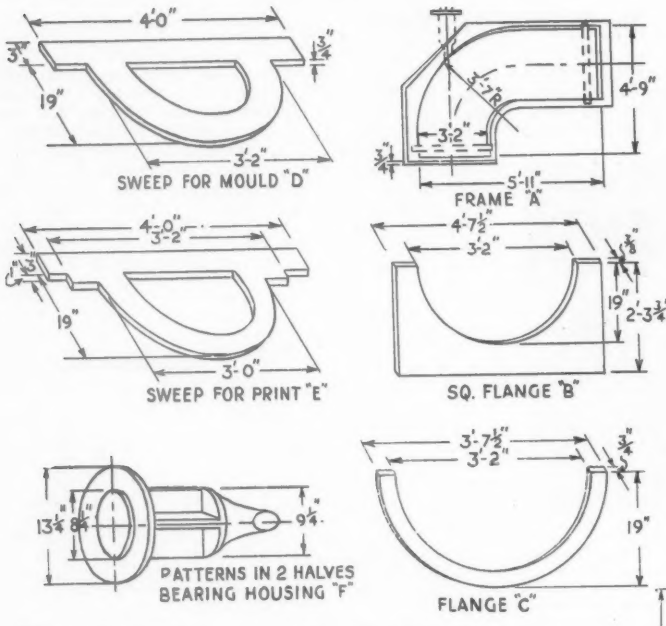


FIG. 2.—TACKLE REQUIRED FOR MAKING A 35-IN. BEND.

Moulding Sequence

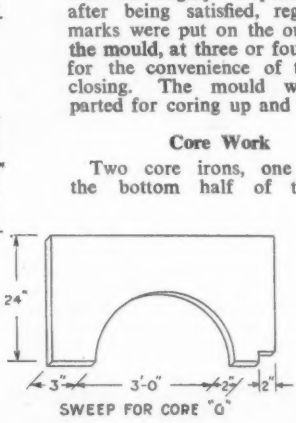
The position for laying out the guiding frame A is shown in Fig. 3. For carrying out the brickwork, it was first marked on both the drag and the cope plates so that the cope mould should match with the drag accurately without any overlap when inverted and lowered over for closing. The drag plate was then placed on a level bed. The pattern frame A, with half-flanges and the branch fixed up accurately, as shown in broken lines in Fig. 2, was placed over the drag plate to the markings referred above. Before starting the brickwork, two adjustable chaplet housings were fixed on the plate, 1½ in. off the centre line of the bend, as shown in the sectional view, Fig. 5. The brickwork then carried out in the routine method, as shown in Fig. 3. The bigger sweep D, Fig. 2, having the outside diameter of the pipe swept along the frame A to guide the brickwork in between the flanges B and C. A coreprint, 12 in. long, on the outer side of the flanges was also swept for the core to rest upon, strickle E, having a radius of 18 in., being used in this case to guide the bricking. The mould was vented, finished, dried, blacked, etc., in the routine method.

For the cope mould, also, the same set of pattern equipment was used. The pattern frame A in the case was inverted, and the flanges B and C, changed over to the opposite side and the other half of the branch F substituted. The moulding procedure for the cope was exactly the same, except that the support plate, as shown in the sectional view, Fig. 5, was fastened firmly to the top of the brickwork to hold it from falling when inverted.

Finishing and drying being completed, the mould was inverted and lowered over the drag. Two moulders seated inside the drag mould, one at each end near the flanges, guide the cope to accuracy during this process. The mould was thoroughly inspected and, after being satisfied, registration marks were put on the outside of the mould, at three or four places, for the convenience of the final closing. The mould was then parted for coring up and the like.

Core Work

Two core irons, one to suit the bottom half of the core



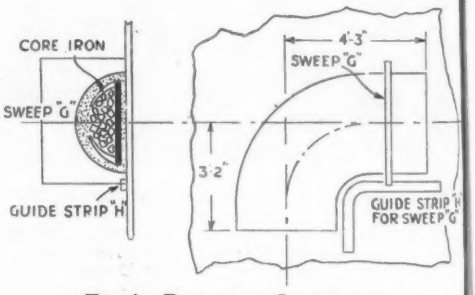


FIG. 4.—DETAILS OF CORE-MAKING.

and the other the top half, were first cast. One wooden guiding strip and a core-sweeping strickle were also made. The core in two halves was built up in pieces of bricks and loam on a cast-iron plate, as shown in Fig. 4, using the normal method of moving the sweep G to and fro against the guiding plate H. Care was taken to make the necessary provision for venting, etc. Finishing and drying being complete, the two half-cores were joined together and, after being inspected for accuracy, were bolted firmly at two ends and, additionally, by an eye bolt at the centre for the convenience of handling. The mould was finally closed after the core had been set in the mould and made ready for casting, as shown in the sectional view, Fig. 5.

A Guide Vane Casting

Figs. 6 and 6a show the guide vane piece. In the absence of a suitable box part, it was found easier and more convenient to prepare the mould by bricking up. A section through the completed mould is shown in Fig. 7 which is self explanatory. The mould was made in three parts, A, B and C. The interesting part of this piece is the moulding of the vanes and the boss. The boss was split up in three pieces as shown for the convenience of moulding. The bottom part D and the top part F of the boss were taken up in the part A and C of the mould. The middle part of the boss and five vanes were formed in the five block cores.

Fig. 8 shows the core box from which the cores were made. The core box is an open bottom type with a detachable side. Sweeps H and J are used to form part of the core box. Sweep H to strike the bottom

FIG. 6.—GUIDE VANE PIECE.

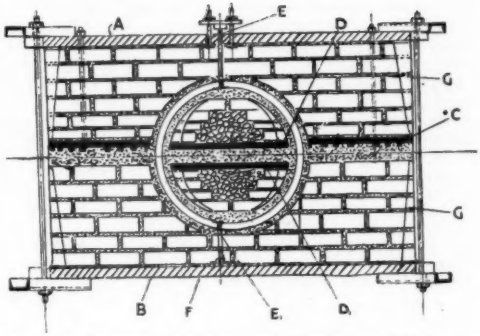


FIG. 5.—SECTION THROUGH THE FINISHED MOULD OF 36-IN. DIA. BEND.

A, top plate; B, bottom plate; C, support plate for the cope; D and D1, core irons; E and E1, chaplets; F, adjustable housing for bottom chaplet, E; G, prodders.

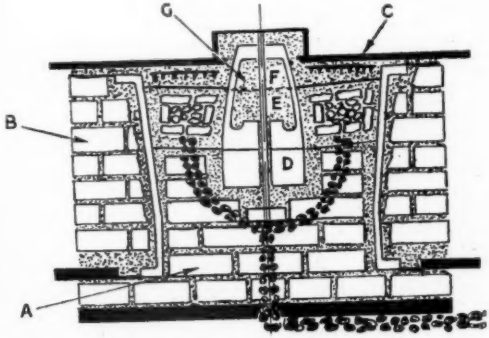


FIG. 7.—SECTION THROUGH THE FINISHED MOULD OF GUIDE VANE PIECE.

A, bottom part; B, middle part; C, top part; D, E and F, boss in three parts; G, central core.

shape, *i.e.*, the taper matching with the vane bottom and the sweep J to strike the outer side and also the top taper of the core, suiting to the top side of the vanes.

Core-making

The core box shown in Fig. 8 was placed level on a plate and rammed up with sand to the mark B. The sand was then strickled off with sweep H to form the bottom taper of the core. Parting sand was dusted over this and a layer of about ½ in. of loam was spread over the parting sand. The core iron provided with a lifting loop and gaggers, etc., suited to the size of the core box. They were cast in advance, clay washed

Jobbing Work in an Indian Foundry

and bedded in the loam. The rest of the core was built over this with pieces of bricks and loam. The centre of the core was filled with cinders, to which the vent gases were connected.

The core was finally finished with the sweep J and the box lightly tapped. The detachable side unscrewed and drawn back and the core box was carefully lifted up leaving the core on the plate. This was finally finished and dried in the oven. The five cores being finished similarly, were assembled in the mould-part A as seen in the sectional view, and carefully inspected for the accuracy of the placing of the vanes and boss. Markings were put on to ensure the reliability of the final re-assembling, the cores were removed and the middle ring B was now lowered over the bottom part A. The vane core was re-assembled accurately to the markings made in advance. The central core G for the boss was now put in. The top part of the mould C was lowered over the part B and checked to ensure a proper bearing surface over all the five block cores. The gases from all the cores were taken through the bottom box. The mould was run on the boss and risers placed on the flange at the junction of the vanes.

The Author does not claim any special novelty for the methods described, but has submitted them to give some idea of the work carried out in an Indian foundry, which may be of general interest.

The Author thanks the management of Tata Chemicals, Limited, Mithapur (India), for giving permission to submit the Paper, and also to take photographs and make use of the sketches, etc.; and would also like to thank his colleagues for the help accorded.

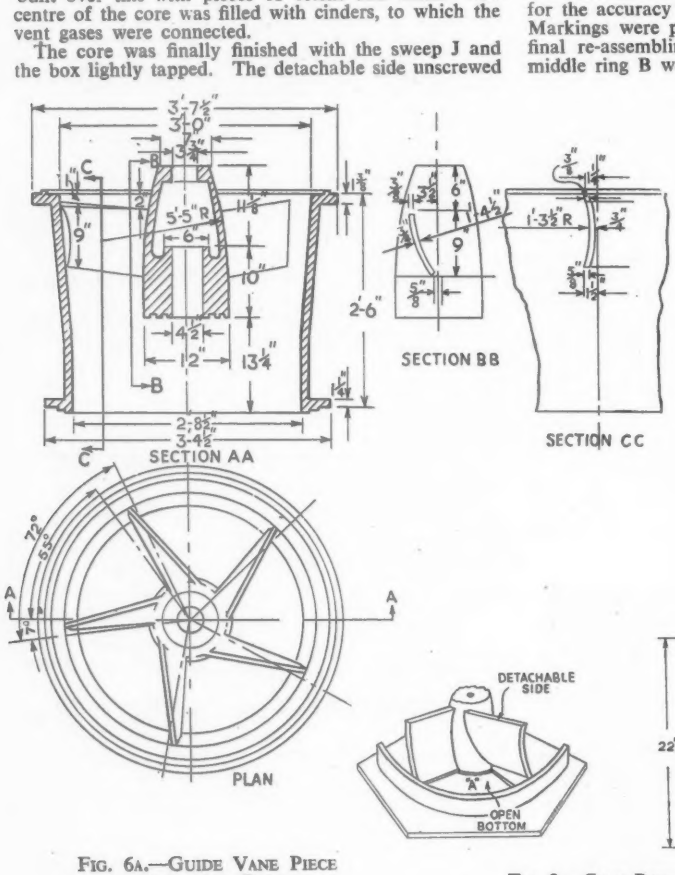


FIG. 6A.—GUIDE VANE PIECE FOR PROPELLER PUMP.

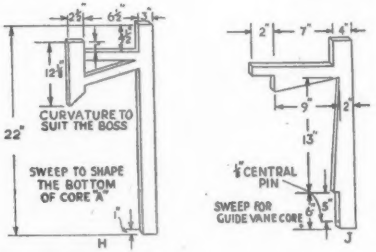


FIG. 8.—CORE BOX FOR GUIDE VANE CORE.

The "Nickel Bulletin" for September—now enlarged—contains a number of unusually interesting abstracts among which are, work on standard tests for metal powders, investigations of nickel-iron alloys with controlled expansion and elastic properties, factors for the calculation of hardenability, the cracking of alloy steels on welding, grain growth inhibitors in steel, graphitisation of piping, precipitation hardening stainless steel, temperature rate of martensite formation and the influence of strain rate and temperature on mechanical properties. A special number of the "Canadian Mining Journal" describing the plants of International Nickel is also reviewed. Copies of the "Bulletin" may be obtained, free of charge, from The Mond Nickel Company, Limited, Grosvenor House, Park Lane, London, W.1.

NOTES FROM THE BRANCHES

EAST ANGLIAN SECTION.—A party of 27 members of the section participated in a visit to the Gipping Works of Suffolk Iron Foundry (1920), Limited, Stowmarket, on October 10. The visitors were welcomed by Mr. F. E. Tibbenham, who introduced the party to the guides who were to conduct them round the various departments. A complete tour of the works was made with a lengthy halt in the foundry where the fully mechanised lay-out was studied with much interest. After the inspection the visitors were entertained at tea in the works canteen. during which the president, Mr. A. F. Hammond, expressed the thanks of the members to the management for having accorded them permission to inspect the works, and to the various guides for their patience in explaining the points of interest throughout the tour. Mr. Tibbenham responded on behalf of the management and guides.

WALES AND MONMOUTH.—On October 12, the branch held the opening meeting of the session, when the members were addressed by Mr. R. J. Richardson, past-president of the branch, who gave an informal talk on his recent visit to Germany. The meeting was held in the canteen at the works of South Wales Switchgear, Limited, Treforest Trading Estate. The company, upon arrival, was greeted by Mr. A. J. Nicholas, general manager. A tour of the works in the care of a team of guides preceded the meeting. Members were able to see how and where castings are embodied in the assembling of the electrical equipment manufactured at the works. A most interesting afternoon was concluded by tea, offered by the management, to which about 60 members sat down.

An illuminating and instructive talk followed, by Mr. Richardson, covering his tour of industrial Germany. Later he replied to many and diverse questions arising out of his discourse. A vote of thanks proposed by Mr. Herbert Cole and seconded by Mr. H. J. Corney was accorded Mr. Richardson with acclamation. Mr. Tompkins proposed a vote of thanks to Mr. Nicholas and his staff for their courtesy and assistance in conducting the members around the works. In seconding this, Mr. Gordon Jones emphasised the importance of such a visit to foundrymen, where they could see the purpose to which the castings they made were put.

Mr. Nicholas, in acknowledging this vote of thanks, expressed satisfaction at entertaining foundrymen, whose contribution to the electrical industry was considerable. The branch of electrical manufacture conducted at this foundry was entirely new to South Wales and necessitated the training of highly skilled personnel. This, he thought, would bridge the gap between the local heavy industries and light mass-production units already existent in the area.

CHANGE OF PLAN

The Institute of Vitreous Enamellers announce that owing to circumstances which will be explained at the appropriate meeting, Dr. De Lattre is unable to present his Paper, "Mixed Acid Pickling," at the annual conference of the Institute, to be held in Birmingham, from November 13 to 16. Owing to the delay in his returning from America, Dr. J. E. Hurst is also unable to present his Paper, "Quality Testing, Shot and Grit."

The council are, however, extremely pleased to announce that two further Papers will be presented. These are, "Glass to Metal Joints," by Mr. J. H. Partridge, which will be read at 10.30 a.m. on November 15; and "Modern Trends of Vitreous Enamelling Shop Lay-outs," by Mr. S. W. Vickery, scheduled for 11 a.m. on November 16.

FORTHCOMING EVENTS

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

NOVEMBER 1.

Keighley Association of Engineers :—"Fabricated Machines," by F. Koenigsberger. At Devonshire Buildings, Devonshire Street, Keighley, at 7.30 p.m.

NOVEMBER 2.

Manchester Association of Engineers (Students' section) :—Visit to Leyland Motors, Limited.

NOVEMBER 5.

Institution of Chemical Engineers (London) :—"The Effect of Using Hot Air in Grinding Systems," by W. F. Carey. At the Geological Society, Burlington House, London, W.1, at 5.30 p.m.

NOVEMBER 7.

Institute of Welding (Sheffield and District branch) :—"Welded Structures," by S. B. Rippon. At the Mappin Hall, St. George's Square, Sheffield, at 7.30 p.m.

NOVEMBER 8.

Institute of Physics :—"The Application of X-rays to the Study of Stresses in Metals," by Dr. W. A. Wood. At Sheffield, at 2.30 p.m.

Institute of Physics (Manchester and District branch) :—"Contact Potentials," by F. A. Vick. At the New Physics Theatre, Manchester University, at 7 p.m.

Institution of Mechanical Engineers :—"Feed Distribution and Hunting in Marine Water-tube Boilers," by H. Hiller. At the Institution, Great George Street, S.W.1, at 5.30 p.m.

Manchester Association of Engineers :—"Motion and Movement in Modern Engineering Practice," by R. Laban and F. C. Lawrence. At the Engineers' Club, 17, Albert Square, Manchester, at 6.45 p.m.

Institute of British Foundrymen

NOVEMBER 2.

Wales and Monmouth branch :—"Technical Records in the Ironfoundry," by R. D. Lawrie. At the Engineers' Institute, Cardiff, at 6.30 p.m.

NOVEMBER 7.

Lancashire branch :—"Some Thoughts on Foundry Management," by J. Roxburgh. At the College of Technology, Sackville Street, Manchester, at 7 p.m.

NOVEMBER 9.

West Riding of Yorkshire branch :—Visit to Thomas Broadbent & Sons, Limited, Central Ironworks, Huddersfield.

PERRY & COOKE (ENGINEERS), LIMITED, is being wound up voluntarily. Mr. S. A. Letts, 118, Chancery Lane, London, W.C.2, is the liquidator.

CORRESPONDENCE

[We accept no responsibility for the statements made or the opinions expressed by our correspondents.]

To the Editor of the FOUNDRY TRADE JOURNAL.

SOURCES OF HYDROGEN IN CAST IRON

SIR,—Mr. Buchanan's second letter deserves a reply and, having failed to see published my reply to his first letter.* I hope you will allow me to answer the points raised in his letter published on October 10, and give them the same publicity as his letter.

Mr. Buchanan's letter represents the ordinary reaction to such a theory as was advanced in my article. It takes no account, however, of the possibility of adsorption on the internal pore surface and it is well-known that surface moisture on glass is not completely removed on heating even under such conditions as Mr. Buchanan's test. Mr. Buchanan does not specify the weight or size of the piece of coke used. Nor does he inform us whether this was cooled in a dessicator and weighed in a dessicated balance in vacuo. In other words, what accuracy can he claim for his moisture test? Was he able then to crush the piece in a dry atmosphere and determine *residual* moisture if any? This is not as simple as it sounds! Even neglecting the possibility of adsorption it is easily shown by calculation that the results given in my Paper are not impossible.

(1) The metal specimen weighed about 25 gm. and 2 c.c.s of hydrogen were evolved when coke moisture was 3.5 per cent.

Only 0.5 c.c.s. were evolved with dry coke. At a metal:coke ratio of 8:1 (= 3 gm. coke) and 2 c.c.s. of hydrogen being derived from 0.0008 gm. of water this corresponds to 0.27 per cent. water on the available coke and coke is not the *only* source, *i.e.*, $\frac{1}{3}$ of the water available.

Purging of the coke would have to be more than 90 per cent. efficient to reduce this below the amount found.

(2) Three gm. of coke at 0.8 S.G. occupy 3.8 c.c.s. Forty per cent. of this is voids, =1.52 c.c.s hydrogen evolved due to coke moisture = 1.5 c.c.s (see above 2.0—0.5) which, if my experimental results are correct, proves that only surface "purging" takes place.

Mr. Buchanan's remarks on the trapping of moisture in the coke during quenching are quite irrelevant as his own results show that nearly all the pores do connect with the outside atmosphere, *but* that does not mean that the paths of access allow complete or even significant purging by cupola gases.

Finally, and most significant of all, it is a matter of foundry record that the prevalence of these eruptive defects varied with the moisture in the coke and *not* with the blast moisture and until some authority, and I suggest the technical committee of the I.B.F. or the B.C.I.R.A., be invited and encouraged to carry out a

(Continued at foot of next column.)

*Mr. Tucker's reply was published in F.T.J. for July 18, 1946.—EDITOR.

(Continued from previous column.)

direct investigation of this point by actually *measuring* the hydrogen evolved in a similar way to the tests I carried out, neither Mr. Buchanan nor any other technician can do more than express an opinion based on inadequate experience.

Yours, etc.,
R. C. TUCKER, M.A., F.I.M.
Foundry manager,
James & Co. (Birmingham), Limited.
October 17, 1946.

PUBLICATIONS RECEIVED

Ransomes and the Second World War. Published by Ransomes, Sims & Jefferies, Limited, Orwell Works, Ipswich.

This well-illustrated 50-page brochure is a straightforward record of the accomplishments of a 150-year-old company during the recent war. The firm was, perhaps, a little more fortunate than some, as a portion of the wartime demand—that for increased agricultural implement production—allowed for a continuity in the output of their normal lines of manufacture. Even if this were not so, their record of production of munitions of war would have been extremely imposing, about a million items of armament supplies were made in the engine works. The photographs used to illustrate the brochure are of uniform excellence. The compilers rightly pay high tribute to their staff, who were members of the Home Guard and A.R.P. organisations. It is doubtful if friends abroad have even now fully appreciated the strain involved by the carrying out of two jobs simultaneously under the most trying conditions.

Zinc Bulletin: No. 1 (New Series). Published by the Zinc Development Association, Lincoln House, Turl Street, Oxford.

This is a revival of a pre-war publication, and is to appear quarterly. The first issue is a 4-page bulletin, and it has managed to devote a little space to pigments, die castings, coatings, and carries an article on "Roll Cap Roofing." The illustrations have been well chosen. There seems to be a desire to kill the word "spelter."

SCOTS FOUNDRY SCHOOL

The site and buildings of the Burnbank Foundry Company, Limited, Falkirk, are to be acquired by Stirlingshire Education Committee at a cost of £7,000, in connection with a scheme to train pupils for the ironfounding industry. The National Light Castings Ironfounders' Association stated that in the event of the education authority purchasing the foundry, the ironfounders in the Stirlingshire area would be prepared to donate the sum of £5,000 as their share in the cost of the scheme. The matter has been remitted to a sub-committee to meet the ironfounders' representatives and adjust details.

INSTITUTE OF BRITISH FOUNDRYMEN

London branch discuss report on the technical council

At a recently held meeting of the London branch of the Institute of British Foundrymen, a discussion took place on the work of the technical council of the Institute. It was largely in the nature of a report, which embraced also the work of the various sub-committees of the council.

MR. A. LOGAN (the elected representative of the London branch serving on the technical council) said that in conversations with members, and particularly the newer members of the Institute, he had found that there was a great lack of knowledge of the technical council and what it did. Some were quite unaware that there was a technical council, and many knew very little of its work. That was a pity, because it was open to any member to utilise from time to time the resources of the council; thus, if any of the members were unaware of the work that was going on, that source of knowledge was of no avail.

Giving first a general description of the technical council and of the way it worked, he said it consisted of a chairman and his deputy, and one representative elected annually by each branch, therefore there were 11 elected representatives. The technical council also had power to co-opt eight additional members; at the moment there were only five co-opted members serving. Last year's chairman was Mr. P. A. Russell, and the deputy chairman was Mr. C. H. Kain. A severe loss was suffered by the technical council on the resignation of both those officers, for business reasons. Mr. Logan took the opportunity to pay tribute to the great amount of work and time they had devoted to the interests of the Institute.

The chairman at present was Mr. A. E. Peace, and Mr. L. W. Bolton was deputy chairman.

Work of Sub-committees

The active work of the technical council was carried on by sub-committees, which were given specific terms of reference when a particular piece of work required to be done.

The sub-committees carried on their work by meetings and correspondence. That often entailed considerable effort and time on the part of the individual committee members and of the firms where the members were located.

With the notable exception of a war-time emergency arrangement, the Institute itself possessed neither funds nor facilities for practical research; the research and investigational work necessary to determine a certain point or to complete a report was carried out in members' works and laboratories by the courtesy of public-spirited directorates who recognised that such work was for the ultimate benefit of the whole foundry industry.

The results of the work done were issued in the form of reports, which were available to all members; such reports frequently formed the basis of Papers presented to the annual conferences of the Institute.

The 10 sub-committees doing active work at the moment were:—

*Sub-committee T.S.*5.—On malleable cast iron specifications. Proposals had been put forward in the form of re-written specifications, which had gone forward to the British Standards Institution for consideration.

*Sub-committee T.S.*6.—Control tests for cast iron. Its valuable work was reported in a Paper to the last annual conference, and should prove of great help and usefulness.

*Sub-committee T.S.*7.—On the effect of mould materials on the soundness of iron castings. A preliminary report had been made to the technical council: it indicated that further work was necessary, and suggested the manner in which the problem could be tackled.

*Sub-committee T.S.*9.—Atlas of defects in castings. The work was proceeding under the enthusiastic chairmanship of Mr. F. Hudson; it was not too much to say that, but for his zeal and faith in the usefulness of such a work of reference being made available to foundrymen in the event of trouble, the atlas would not have reached the proof stage which happily it had reached. (Mr. Logan exhibited a proof copy for inspection at the meeting and said it was hoped that the actual issue would be available to all members before long.)

*Sub-committee T.S.*10 was formed to examine the use of basic refractories for cupola linings. Whilst that was not so important since the war was over and lower phosphorus materials had again become available, a valuable contribution had been made to technical literature by the sub-committee's work.

*Sub-committee T.S.*12 was commissioned under the chairmanship of Mr. C. H. Kain to prepare an authoritative statement which would be a guide to both founders and purchasers concerning the tolerances which might be regarded as reasonable or allowable in all types of castings.

*Sub-committee T.S.*13.—Testing of oil sand. The technical council had considered and approved for publication the report of the sub-committee, which was appointed to prepare a recommended procedure for the testing of oil sand.

*Sub-committee T.S.*14.—Light alloy test-bars. The sub-committee was given the task of investigating a new form of light alloy test-bar which had been proposed by the Ministry of Aircraft Production for use with alloy D.T.D.300, and also its usefulness with regard to other aluminium alloys, and to make recommendations as to its suitability. In conjunction with reports from other sources, that suggested bar had now been dropped altogether. The sub-committee was at present investigating chill-cast test-bars of the form suggested by the Ministry for use in connection with die castings.

Report on the Technical Council

*Sub-committee T.S.*16.—Cast iron specifications. The sub-committee was formed under the chairmanship of Mr. Russell to consider B.S.S. 321 and B.S.S. 786 in the light of present practice and experience. A preliminary report had been drawn up and certain recommendations made.

*Sub-committee T.S.*17.—Stress relieving of iron castings. That important matter had been receiving much attention recently, and the sub-committee was set up, under the chairmanship of Dr. A. B. Everest, to review present practice and to make recommendations.

Mr. Logan added that the Institute, by means of its technical council was in close collaboration with the technical committees of other bodies where matters pertaining to castings, specifications, or testing, were involved. It had direct representation on eight external technical committees; and technical representatives of the I.B.F. sat on 27 specification committees of the B.S.I. Recent examples of the fruits of such work were the Report on Sand Testing (recently issued to members) drawn up by the joint committee on sand testing, comprised of the B.C.I.R.A., the B.N.F.M.R.A., the I.B.F., and the Iron and Steel Institute, in which the I.B.F. had played a prominent part; revised specifications for cast iron, and malleable iron; and a Code of Inspection for Copper Base Alloys, now being finalised, and which would probably be ready in the near future.

Finally, Mr. Logan commented that the work of the technical sub-committees, which was proceeding all the time, was inevitably slow. Many investigations were long-term investigations. But the work proceeded smoothly and efficiently, and a good deal of very useful knowledge was being gained.

DISCUSSION

MR. V. C. FAULKNER (past-President of the Institute, and of the London branch) was particularly interested in the work of the technical council, for he had put forward the idea of its formation; he did not claim that the idea was original, however, for he had copied it from the American Foundrymen's Association.

Very soon after its formation he had served on the melting furnaces sub-committee, which in 1940 had published a report. That report had become a standard work on the subject; it was extremely reliable, if an extra 50 per cent. were added to cover the post-war increases of cost.

When that work was finished he had suggested investigating the basic cupola, which was developed by one of the branch members, Mr. Renshaw. The sub-committee responsible had published a report, which was useful at the time, and technologically it was extremely interesting, so much so that the important people in the steel world had become very interested, and some of their most prominent metallurgists had joined the sub-committee. They were interested in the fact that Mr. Renshaw had reduced phosphorus in the presence of carbon: it seemed that if the steel-makers, using high-sulphur and high-phosphorus materials, could reduce phosphorus in the presence of carbon, they could probably reduce their steel melting costs by something of the order of £1 per ton.

Value of Young Blood

DR. A. B. EVEREST, referring to "John Gardom's apprentices," said that he had some experience of working with these young men, and he wished to emphasise the valuable assistance they had given on technical sub-committees. The scheme organised by the Institute's past-President, Mr. Gardom, was still in being, but some concern was felt that not sufficient of those young people were coming forward. He urged that members of the Institute should not hesitate to encourage any of their young men who were interested.

Referring to the work of some of the sub-committees with which he had been associated, he said that work on a particular subject was undertaken as the result of suggestions from members of the technical council or from sources outside that council; it was up to the members as a whole to put up their problems and make the technical council work for them.

One matter which had been investigated was methods of casting test-bars. He had presented at a conference of the Institute the report of sub-committee T.S.4, on recommended procedure for test-bars. But the technical council was in the dark as to whether anyone was using the methods recommended in the report; the members of the council would be helped and encouraged if they could know that the work done in the past was being used and was proving helpful, and he personally would be glad to hear from those who were using the recommended methods, or who had any experience of them.

Standardisation of Micrographs

Another committee with which he had been associated, and which had since dropped out of the list, was T.S.15. It was a small sub-committee set up a year or so ago to explore the possibility of standardising the magnifications of photo-micrographs in journals. It was felt by some members of the technical council that it would be useful if, when looking through technical publications, one knew instinctively that, for instance, a picture of graphite was magnified to 50 diameters, that a pearlite structure was magnified at 250 diameters, and so on. The sub-committee, after reviewing the position and consulting other bodies, had been forced to the conclusion, however, that it was not possible to secure agreement. There were difficulties about the non-availability of certain apparatus: further, some of the members had maintained that it was necessary to have a free hand to choose the magnification which was considered to be best for any particular purpose. That experience was an example of the fact that 100 per cent. results could not always be obtained.

Sub-committee T.S.16, of which he was a member, was dealing with cast iron specifications. It had worked on the principle that we in this country should have one specification which would apply right through the

whole range of cast irons, as had the Americans. That afternoon he had attended a meeting of the British Standards Institution at which recommendations from the technical council were tabled.

A new sub-committee was to explore the effect of stripping temperature of iron castings. During the war, in the production of clutch plates, brake drums, and so on, for fighting vehicles, a foundry would produce a batch of castings of which half would be rejected on mechanical tests. The point was that if a casting were stripped too hot, its properties would be affected, and the new sub-committee would endeavour to determine just how hot a casting could safely be stripped, and the effect of stripping temperature on properties generally.

Atlas of Defects

MR. F. HUDSON, speaking as chairman of sub-committee T.S.9, engaged on the preparation of the Atlas of Defects in Castings, expressed appreciation of Mr. Logan's kind remarks with regard to this work, but disclaimed the major credit. He paid tribute to his colleagues on the sub-committee, and to Mr. Logan, for the great support that had afforded him. Further, in connection with the preparation of the atlas, the sub-committee had enjoyed the co-operation of the grey-iron and brass founders; but there had been a very poor response from the malleable iron and steel people. He did not know whether the malleable iron and steel people ever made defective castings, but in any case he suggested that they might try to make a few during the next six months and send some pictures to the sub-committee!

The draft atlas was a first edition, and he emphasised that it was not the complete atlas. The sub-committee had collected about 30 photographs illustrating the more simple defects, and it was proposed to extend the work over the next two or three years.

Dealing with the point that the technical council maintained close liaison with other institutions and associations connected with the foundry industry, he said it was his privilege to represent the technical council, in respect of copper-base alloy castings, on sub-committees of the B.S.I. and on the technical committee of the Association of Bronze and Brass Founders.

For the past two years he had represented the I.B.F. on a sub-committee of the B.S.I. dealing with the preparation of a Code of Procedure for the Inspection of Copper Base Alloy Castings. That document had now reached its finally approved form, and he believed that very shortly it would be made available to the foundry industry. It might prove rather revolutionary for some foundrymen; they might not like it. However, he recalled the words used by the branch president in his address that evening, to the effect that "more exacting demands had brought forth much progress." The idea of the code of inspection was the production of better castings, and if they all produced better castings the industry as a whole would benefit.

The B.S.I. sub-committee concerned had worked under the chairmanship of Mr. A. J. Murphy, the immediate past-president of the branch; and Mr. Hudson paid tribute to his very able work.

MR. C. H. KAIN commented on the pleasing fact that many new members were serving on the technical council nowadays. Whereas before the war it had reached the stage at which all the members were old stalwarts, it was remarkable that now a large number of new men had come forward and helped with the work.

Dimensional Tolerances

Speaking as chairman of sub-committee T.S.12, dealing with dimensional tolerances for castings, he said its work was eminently practical. The idea had arisen because, whereas all specifications gave detailed requirements for physical properties and specified minimum limits (and in a few cases top limits), specifications could not be found which gave a tolerance of any description for casting dimensions. Machined dimensions were given a tolerance; but the demand for dimensions of castings was that they must be "accurate," or that they "must conform to the drawings" or "the pattern," or something of that sort. Again, all foundrymen had suffered at the hands of inspectors who would send castings back because they were "plus 40 thousandths on a 5-in. dimension," but would not state whether they would accept plus 39 thousandths or less.

The sub-committee had started to collect adequate data, for it was his view that the vast majority of technical work was done with insufficient data. As a result of analysing the data, it had soon become evident that there were two schools of thought on the question of dimensions; those who were associated with predominantly mechanically producing foundries, and were accustomed to think of very small dimensional tolerances, and those who worked with large patterns and in small quantities who were accustomed to think of very wide tolerances. After due consideration the sub-committee had decided to aim at producing an over-riding general specification on the general lines of B.S.I. specifications. It might be possible to deal separately with special classes of castings demanding very great accuracy.

The sub-committee intended to include in its report to the technical council some comments and, he hoped, some recommendations on setting-up for machining and on the treatment of the castings after they had been received by the customers. Practice varied very widely, and it was felt that it would be helpful to enunciate some general principles. Naturally, they would try to give it a foundry bias; but before they could make definite recommendations they would seek advice from engineering bodies.

Testing of Oil Sand

DR. SKERL, who contributed to the discussion as a member of sub-committee T.S.13, dealing with the testing of oil sand, said its work was a continuation of that of a previous committee which had produced, in conjunction with the Iron and Steel Institute and the British Non-ferrous Metals Research Association, a handbook on testing methods for green and dry sand.

One of the first problems tackled by the sub-committee was that of the evolution of gas from cores. It was tackled rather energetically last year, a report was sent to the technical council, and it was published

Report on the Technical Council

as Paper No. 857 at the annual conference in Birmingham earlier in the year. The method proposed, and which was put forward tentatively, was based on heating a known weight of core sand in an electric stove and measuring the volume of gas evolved. At the moment, he believed, only one firm had the apparatus available. In the annual report of the technical council the sub-committee had expressed the wish that other members of the Institute would obtain the apparatus, make the test and report the results, so that the method could be brought forward to the Joint Committee on Sand Testing as a national method for testing the evolution of gases from core sands.

A MEMBER, commenting that there was a certain amount of controversy concerning the methods of taking light alloy test-bars, urged that it would be right in the future to differentiate between sand and die castings.

MR. LOGAN said the speaker's remarks were, in general, in accordance with the ideas held at the moment. There had been a proposition by the Ministry of Aircraft Production to introduce a new type of bar. After investigational work, the light alloy test-bar committee had reported unfavourably on it; that report, in conjunction with unfavourable reports from other sources, had been sufficient to persuade the Ministry to drop that particular project. The proposition now was that, where die castings were being made, chill-bars should be cast to represent die castings. The light alloy test-bar sub-committee was investigating chill-bars issued by the Ministry, and would report the results and make recommendations.

Dangers of Overlapping

MR. A. J. MURPHY (past branch president) urged the sub-committees of the technical council to beware of the dangers of overlapping. He feared that on the non-ferrous side a great amount of effort was wasted because of lack of co-ordination of the work of some of the technical sub-committees with that of other committees in existence. The technical committee of the Light Metal Founders' Association had done a large amount of work on the use of the test-bar mentioned by Mr. Logan: whether that work was well done or badly done, it was a pity that apparently the Institute's sub-committee had taken up the matter without co-operation with the L.M.F.A. committee.

Other examples of overlapping in greater or lesser degree with the works of other organisations, were the action on magnifications in photomicrographs and the submission of comments on draft specifications to the British Standards Institution.

He suggested that technical committees, before pushing too far ahead with new investigations, should make it their duty to inquire what was being done elsewhere on those subjects. Where there were research organisations such as the B.C.I.R.A. and the B.N.F.M.R.A., it would appear that they would be the best organisations to give advice to the technical committees of the institutions. He emphasised that he did not belittle in any way the work of the technical committees, but wished to ensure that the technical resources of the industry were applied in the most efficient manner.

The work of the I.B.F. committees on cast iron specifications had been probably the most important of any that had been done on that subject; that was because those committees had got in early and their leadership was accepted. In all cases it was necessary to make certain that there was a need for a committee to undertake experimental work before it became too deeply involved.

Study of New Developments

MR. V. C. FAULKNER, suggesting that a further committee be formed by the I.B.F. to study new developments, drew attention to the fact that the American Foundrymen's Association already had a special committee to study the new investment process. With such a committee in the I.B.F., collaboration could be effected in new processes, and they could all help each other along what was obviously a very difficult path to start with.

MR. LOGAN, suggesting that Mr. Murphy's remarks were not fully justified, recalled his own earlier statement on the close collaboration existing between the technical council of the I.B.F. and the technical committees of other bodies. But, as showing that collaboration was not always possible, he mentioned one instance in which the I.B.F. had sought to co-operate with another body and had suggested an exchange of technical personnel as between the committees of the two bodies. The efforts in that direction, however, did not bear fruit. In that particular case there had been overlapping, in spite of the efforts of the I.B.F. to avoid it.

ACID-RESISTING SILICON IRON PIPES

A new British Standard, just issued, deals with the dimensions of high silicon pipes and pipe fittings, from one to 12 in. nominal bore, which are extensively used in chemical plant and where excessive corrosion is inevitable or anticipated. The minimum silicon content to give maximum corrosion-resisting properties is generally agreed to be 14.25 per cent.

Silicon iron, which is more brittle than ordinary cast iron, in consequence, requires greater care and precaution in handling and transport. It is more difficult to cast and is more liable to porosity and distortion than ordinary cast iron. There is particular difficulty in casting silicon iron pipes with integral flanges and, in this standard, flanged pipes are specified with 45 deg. cone ends for assembly by halved loose coupling flanges of ordinary cast iron impinging upon the 45 deg. cone ends of the pipe.

The standard also deals with spigot and socket pipes, the spigots of which are generally similar to the ends of the cone end pipes, thus allowing inter-connection between cone end and spigot and socket pipes. The sockets of the spigot and socket pipes will also accept the plain spigots of chemical stoneware pipes of the same nominal bore so allowing inter-connection between silicon iron socket and stoneware spigot. The fittings included comprise elbows, bonds, tees and crosses for both flanged and spigot and socket pipes.

Copies of this publication (B.S. No. 1333:1946) can be obtained from the Publications Department, British Standards Institution, 28, Victoria Street, London, S.W.1, price 2s. post free.

PROSPECTS FOR MAGNESIUM

In an article entitled "Economics of the Engineering Materials," which Mr. Harold A. Knight, news editor of "Materials and Methods," has written for his magazine, interesting opinions are expressed on the future for magnesium. The following is an abstract of his views.

One of the most glamorous metals of to-day is, of course, magnesium, which in theory, at least, has the most promising future of all materials, if for no other reason than its abundance. It has been stated by imaginative light metal engineers that had the magnesium industry been set up as we now know it, before iron and steel had been developed, the ferrous industry would have found it difficult to become established and forge ahead. What ponderous machinery it takes to smelt, refine and work steel! What a corrodible metal steel is! How hard to machine! It forms scale even in process of manufacture. It must be painted constantly, else its life in years is counted on the fingers of a hand.

For its raw materials (sea water, brines and dolomites) the magnesium supply is unlimited. It is one-sixth the most abundant material. There are several who boldly prophesy that it has a greater future than aluminium. The sales manager of Dow Metal Company states that within the next two years the price will go down from the present 20½ cents per lb., not so much because of quantity production as because of technological advances. He says that the metal could be reduced by as much as 25 per cent. over the next five years. A key expense is electric power, which costs about 1.58 cents per lb. of magnesium, as against 0.5 to 3.5 cents per lb. for aluminium.

Utilising "Secondary" Power

Power tends to become cheaper after a producer has been long in business and amortised the original cost of his dam, power house and transmission lines. Moreover some power companies sell "secondary" power which is the water that would go over the dam in the spring and during winter thaws and would otherwise be wasted. A magnesium or aluminium producer could average down his cost of production by using this "secondary" power some of the time.

Magnesium and aluminium are in many respects sister metals. An aircraft manufacturer found that in producing an aluminium stabiliser, costs were $231 ($40 for material and $191 for labour) against $140 for magnesium ($62 material and $78 for labour). The Douglas Aircraft Company state that a finished magnesium I-beam is 25 per cent. cheaper, 35 per cent. stronger, and 5 per cent. lighter than the aluminium beam it replaced. As to magnesium die castings, one manufacturer lists machining costs as 25 per cent. higher for aluminium, 35 per cent. higher for bronze and 50 per cent. higher for cast iron than for magnesium.

An interesting case history is that related by Edward S. Christiansen, president of the Magnesium Association. He said: "We have found certain aluminium castings where we can cut the section to ⅓- or ¼-in. thickness with magnesium stampings. Also with the

(*Continued in next column*)

INTERNATIONAL TECHNICAL COLLABORATION

A meeting was held at the Maison de Fonderie, Paris, on October 19, Mr. J. Lobstein presiding. There were present:—Prof. Dr. Mont Fr. Pisek and Dr. Jenicek (Czechoslovakia); Prof. K. Gierdziejewski and Mr. J. Dickman (Poland); Mr. A. Brizon and Mr. J. Lainé (France); Mr. V. Delport (U.S.A.); Mr. V. C. Faulkner (Great Britain); Dr. Lips and Mr. F. W. E. Spies (Holland); Mr. R. Deprez and Mr. L. Foulon (Belgium); and Mr. A. Le Thomas representing the International Committee for the Testing of Cast Iron. Mr. T. Makemson, M.B.E., the honorary secretary, was in attendance.

After a review of the informal meeting held in Cleveland in May, it was reasserted that any country may apply for membership, providing it possesses a properly organised technical association. Mr. Lobstein was re-elected president, and Britain was asked to nominate a member of the Institute of British Foundrymen to be vice-president (president elect). Mr. Makemson was re-elected secretary.

Not much could be done at the moment towards the establishment of a calendar of international congresses but a tentative invitation from Czechoslovakia for 1948 was accepted, and one from the U.S.A. for 1952, also noted. The next meeting of the Committee was to be held in Liège in September, 1947.

Note was taken of the work done in Britain, Poland, and Holland during the war in fields covered by the sub-committees. These will be taken up again seriously next year. A vote of thanks to the chairman closed the meeting.

(*Continued from previous column*)

lower specific gravity of magnesium we come up with 30 per cent. of the weight of the original aluminium castings. That gives us enough edge in price to compete. We have received a good order for a cover for an adding machine case that was originally designed in ⅛-in. thick aluminium. We ended up with 0.051-in. magnesium. We might have used 0.040-in. thick magnesium but they objected to such thin material."

It may be a surprise that magnesium is competing in several instances with grey-iron castings. As one engineer expresses it, "Compared with pig-iron, magnesium is way out of line, but the saving grace is the exceptional physical properties of magnesium and the fact that fabricated cast-iron parts are invariably overdesigned and excessively heavy. Moreover, with magnesium, the user can decrease materially his handling costs—raw material entering the plant, material in process in the plant and shipments of finished goods."

WE REGRET that we omitted to state the address of the National Brassfoundry Association in our last issue. This is: 106, Edmund Street, Birmingham, 3.

GOVERNMENT AND INDUSTRY

VALUE OF TRADE ASSOCIATIONS

The Trade Organisation Committee of the Federation of British Industries, which was specially appointed to submit recommendations in regard to the methods to be adopted for organising contact between the Government and the various industries of the country, have now made their report. At the October meeting of the Grand Council of the F.B.I., the report was unanimously adopted, and it has now been forwarded to Sir Stafford Cripps, President of the Board of Trade, and other Ministers. Reports from the working parties set up by the President of the Board of Trade to examine 15 industries are now being considered, and the F.B.I. feel, therefore, that the question of the relationship between the Government and organised British industry, and the best machinery for the purpose, has immediate significance.

It appears to the Trade Organisation Committee that there are three main methods of co-operation between the Government and industry which, in different circumstances, would prove valuable. In what, they believe, are the correct order of usefulness and desirability they are: (*a*) Direct contact with industry; (*b*) an advisory council; and (*c*) a statutory industry board.

Improving Production

"The main objective which we have in mind," the report states, "is that by perfecting our methods of organisation we may contribute to increasing production and improving overall efficiency. Any proposals for new methods of collaboration must recognise the infinite variety in the circumstances of different industries. While, therefore, we agree that contact must be organised contact, we would stress that the form of organisation adopted must be designed to meet the variations in these conditions, and that it is quite certain that the problem cannot be solved by laying down a standard pattern to which all must conform. A small industry with a well-organised trade association covering 100 per cent. of the production would need very different machinery from a large, highly sectionalised industry organised in a series of associations with varying degrees of representativeness. Similarly, an industry consisting predominantly of very small firms producing perishable articles of daily consumption would be susceptible to different conditions from an industry producing capital goods."

Only in comparatively rare circumstances does the committee feel that there may be a place for Statutory Boards. Comments on the three main methods of co-operation are:—

Direct Contact with Industry

In many industries close contact has been developed between a sponsoring Government department and the trade association. Relations are intimate and confidence has been established on both sides. Above all, methods have been developed which make possible rapidity of decision. The Committee can see no object in interfering with existing methods where they are working well. They believe that similar relations could easily be built up with many other industries. The war has itself led to a strengthening of trade associations. They will have no difficulty in maintaining their organisation on a voluntary basis and in improving their efficiency, provided they are accorded recognition as the normal official channel of communication between the Government and their industry. Voluntary trade associations have found their work hampered in the past by the practice of Government departments in sometimes accepting the trade association as the mouthpiece of its industry and at others relying on advice from other sources. Many industries are already developing a federation of their associations which would materially assist this method of contact. It is therefore strongly recommended that the Government should give official recognition to efficient trade associations and normally use them, and them alone, in dealing with the affairs of their industry as a whole.

Advisory Councils

Direct contact between trade association and Government department is in many ways the most effective and flexible method of contact where confidence exists on both sides, but circumstances may arise where the Minister may feel it essential to obtain advice from a wider circle than the industry concerned. In such cases the Minister may feel that he requires to supplement the day-to-day contacts between his department and the trade associations by some more formal machinery. It is recommended that where this machinery is established, it should take the form of an Advisory or Consultative Council.

Statutory Industry Boards

There may be cases where neither direct contact nor Advisory Council would be adequate to provide an industry with the machinery that it needs. Before the war the cotton industry discovered that it required a Statutory Supervisory Board with certain executive powers to supplement the work of the trade associations and to consider the needs of the industry as a whole and not section by section. Other industries may well reach similar conclusions. It is considered, however, that any such bodies should be created only with the greatest caution, and that the Minister should satisfy himself that they are absolutely essential after all alternative methods have been considered.

Unions and Management

Referring to the working parties, the report says that although only four have to date published their reports, one general point of great importance has emerged. That is that they agree that in any further arrangements, the trade unions concerned must be associated with management in the consideration of a range of general questions affecting the well-being of the industry. The Committee have no reason to believe that the conclusion of the other working parties is likely to be different.

The Committee feel that organised contact between Government and industry must be maintained through

(*Continued on page* 222, *column* 2.)

Save Fuel
IN YOUR CUPOLAS
BY USING
STANTON
HOLWELL
or RIXONS
SAND-LESS
MACHINE CAST
PIG IRON
THE STANTON IRONWORKS COMPANY
LIMITED NEAR NOTTINGHAM

PERSONAL

MR. DAVID THOMSON has resigned from the board of Baldwins (Holdings), Limited.

MR. WILLIAM KIRKHAM has been appointed chairman of Edward Wood & Company, Limited, engineers, of Manchester.

MR. WILLIAM HENRY SHARP has been appointed assistant managing director of Thomas Smith & Sons (Rodley), Limited, crane and excavator manufacturers, of Leeds. MR. FREDERICK JOHNSON has been appointed a local director of the company.

SIR T. G. WRIGHTSON, Bt., chairman of Head, Wrightson & Company, Limited, Thornaby-on-Tees, has received the congratulations of his fellow directors and shareholders on the completion of 50 years with the firm. He has been chairman for 25 years.

MR. A. D. STORKE and MR. CARL M. LOEB, JUNR., have been appointed to the board of directors of the Climax Molybdenum Company of Europe, Limited. Mr. A. D. Storke, who is president of the Climax Molybdenum Company, New York, has been elected chairman of the board.

MR. W. A. TURNER and MR. JEFFREY, both of whom have been on the executive staff of the Coleman Foundry Equipment Company, Limited, are establishing themselves in business as foundry consultants under the style of W. A. Turner, Jeffrey & Company. Their offices are at 4, London Road, Royston, Herts.

MR. THOS. M. GRANT, a director of Raine & Company, Limited, Newcastle-upon-Tyne, and Delta Iron & Steel Works, Derwenthaugh-on-Tyne, has had conferred upon him by the President of the French Republic the title of Chevalier de la Légion d'Honneur, "in recognition of his services to France during the war years."

MR. A. BRUCE, who recently retired from the position of works manager to Mackenzie & Moncur, Limited, ironfounders, etc., of Edinburgh, after 43 years' service, was one of the pioneers of the development of steel mix irons. During the 1914-18 war he did much work on the production of bombs and the like. He was a recognised expert on the production of pressure resisting castings in high duty iron.

MR. H. B. ROBIN ROWELL, who was installed as president of the North-East Coast Institution of Engineers and Shipbuilders, on October 18, was appointed a director of R. & W. Hawthorn Leslie & Company, Limited, in 1929, and has been in charge of Hebburn shipbuilding yard since 1936. He was appointed chairman of the company in 1943. A native of Tyneside, he was educated at Repton and began his apprenticeship with R. & W. Hawthorn Leslie in 1912. He has been president of the Shipbuilding Employers' Federation and chairman of the Tyne Shipbuilders' Association. He is vice-president of the Shipbuilding Conference, a member of the General and Technical Committees of Lloyd's Register of Shipping, a member of council of the Institution of Naval Architects, and a member of council of the British Shipbuilding Research Association.

EFFECT OF NATIONALISATION ON INDUSTRIAL RECOVERY

This was a time when men of all parties and even of no party must co-operate in face of our economic position, which was a problem transcending party politics and considerations, said Sir Francis Joseph, president of the Institute of Industrial Administration, when he opened the conference of the institute with an address on "Management and To-morrow." Another aspect also demanded attention. We were desperately short of materials vital to Britain's recovery. First and foremost among them was fuel. Unless supplies were increased, it was certain that both homes and factories would be desperately short of coal at a moment when nationalisation of this basic industry was certain. To nationalise many other industries created a spirit not only of frustration, but despair in the minds of those charged with the task of re-establishing British industry.

It was common sense, Sir Francis suggested, that fresh schemes of nationalisation would only weaken the national effort. Why not hold them in abeyance until the Government and the Ministry of Fuel and Power could prove that Government control and ownership was efficient and effective? Such a policy would demonstrate that the needs of the State were of paramount consideration.

Recent Wills

HUDSON, MORRIS, of Edgbaston, chief Midland representative of the United Steel Companies, Limited, Sheffield £7,257

MAUGHFLING, JOHN, of Wimbledon, London, S.W., a director of John I. Thornycroft & Company, Limited £51,484

GOVERNMENT AND INDUSTRY

(*Continued from page* 220.)

trade associations. "Experience during and since the war, we are convinced," continues the report, "completely justifies our claim that the development of the trade association structure would be in the general interest. We do not consider that there is any need for new methods of contact to be such as will prejudice the trade association movement. We would urge that with these considerations in mind it should be recognised that the Government would do more harm than good if it were to attempt to force upon an unwilling industry any rigidly preconceived pattern, whether tripartite or otherwise, of a continuing machine, even in those industries which working parties have examined, still less in the dozens of others where no such examination has been made.

For the purpose of the inquiry, the Committee point out that they have been in association with representatives of the British Employers' Confederation. They also point out that the recommendations contained in the report are confined to commercial and technical matters affecting industry, and none of the proposals should be taken to refer to labour questions.

So that we meet in CO-OPERATIVE COUNCIL

An unhampered co-operation between Engineer-Designer and Steel Founder was found during the war to be an essential factor in producing accurate, reliable steel castings of high quality.

This was one of the principal ends for which the British Steel Founders' Association was formed, and it exists today to provide means whereby all who make, or use steel castings, may meet in co-operative council to maintain and improve the already high Standards of British Steel Castings.

BSFA
STEEL CASTINGS

Also operated by the B.S.F.A. is a Technical Advisory Bureau (including Library, Statistical and Research Departments) which is at your service at all times. Your enquiries upon technical or production issues are invited so that, as user or designer,

YOU CAN MAKE BETTER USE OF STEEL CASTINGS

The Secretaries, BRITISH STEEL FOUNDERS' ASSOCIATION, 301, GLOSSOP ROAD, SHEFFIELD 10

Longleys

NEWS IN BRIEF

GOODMAN'S ENGINEERING, LIMITED, is being wound up voluntarily. Mr. A. E. Attwood, 90, Queen Street, Cheapside, London, E.C.4, is the liquidator.

THE BRITISH PERLIT IRON COMPANY, LIMITED, is being wound up voluntarily. Mr. J. H. Tate, 13, Mosley Street, Newcastle-upon-Tyne, 1, is the liquidator.

THE ALFORD ENGINEERING COMPANY (HILLINGDON), LIMITED, 31, Kings Road, Sloane Square, London, S.W.3, is paying a first and final dividend of 3s. 3d. in the £.

REPLYING TO A QUESTION by Mr. W. Shepherd in the House of Commons, the Minister of Supply said that the ironfoundry trade was at present operating at about two-thirds of capacity overall.

SCOTTISH PATTERNMAKERS are preparing a claim for an increase in wages to align their rates with those paid in England. It will go before a delegate conference to be held in Newcastle-upon-Tyne on November 1 and 2.

FIFTY AUCTION SALES are to be held by the Ministry of Supply's Directorate of Disposals (Regional) between now and March, 1947, to speed up the disposal of stocks of miscellaneous surplus stores, including industrial and engineering equipment (less machine tools).

VICKERS-ARMSTRONGS, LIMITED, have concluded an agreement with the Gilbert & Barker Manufacturing Company, of Springfield, Mass., U.S., a wholly owned subsidiary of the Standard Oil Company of New Jersey for the manufacture of "G. & B." petrol pumps, which are being manufactured at the Vickers' works at Crayford.

ORDINARY SHAREHOLDERS of Vab Products, Limited, engineers, etc., are being offered, at 4s. per share, 250,000 new 2s. ordinary shares ranking with existing ordinary shares. Proceeds of the issue will be used to finance extension of the company's plating works, completion of the new factory, and for increasing the plant in the other factories.

THE G.W.R. SIGNAL AND TELEGRAPH WORKS at Reading, home of all the mechanical, electrical and telecommunication devices in use on the system and birthplace of the automatic train control, is to be rebuilt and re-equipped, at a cost of £300,000. The new works will be on the same site as the existing works, first established at Reading in 1855.

THE MINISTRY OF SUPPLY announces that correspondence in connection with the ironfoundry industry, which in the past was addressed to the Iron and Steel Control at Ashorne Hill, Leamington Spa, should now be directed as follows:—The Director for Iron Castings, Iron and Steel Board, Bush House (South-West Wing), Strand, London, W.C.2.

HERBERT MORRIS, LIMITED, of Loughborough, have acquired from Beardsley & Piper, of Chicago, the licence to manufacture and sell the Speedmullor and the Mulbaro. As to the former we are obtaining some data of performance in a Sheffield foundry and hope to publish these in the near future. Some particulars of the Mulbaro, which is a portable Mullor, are obtainable on writing to Loughborough.

THE NEXT EXAMINATIONS for admission to the Institute of Marine Engineers will be held in 1947 as follows:—Students, April 15-18, and October 7-10; graduates, May 12-16; associate members, May 12-19. Syllabuses of these examinations, copies of previous Papers and particulars of exempting qualifications may be obtained on application to the Secretary of the Institute, 85, Minories, London, E.C.3.

AN EXHIBITION of nearly 100 portraits and other works by eminent British artists, depicting the personnel, aspects, and services of the chemical industry, was opened at the Suffolk Galleries, London, W.1, on October 18. These paintings were commissioned by Imperial Chemical Industries, Limited, in the war years for use in a public relations programme designed to raise the prestige of British research and the British chemical industry throughout the world. The exhibition remains open until November 9, and provides an unusual opportunity of seeing the works of artists produced under the patronage of industry.

IN PARLIAMENT

Steel Shortage

MR. A. EDWARD DAVIES asked the Minister of Supply to make a statement respecting the general shortage of steel, and to indicate what action he was taking to deal with the position.

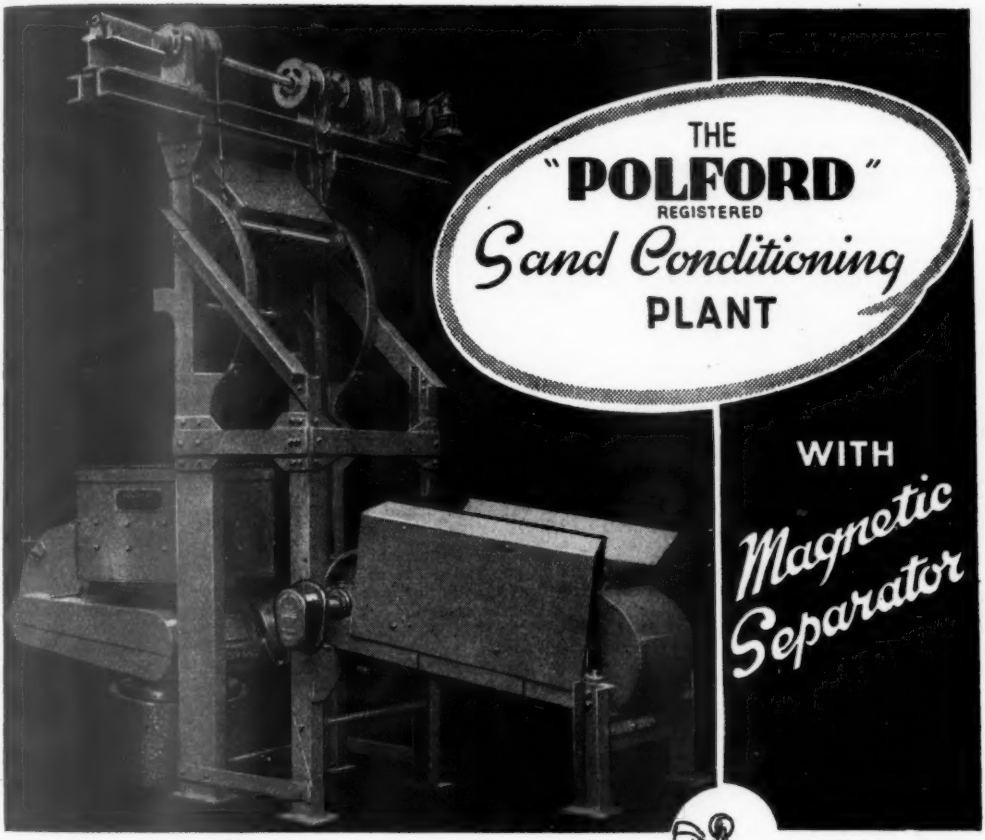
MR. WILMOT said that the shortage of steel supplies was mainly due to an abnormal demand and a severe short-fall in imports. Action had been taken to increase home production by importing more of the richer foreign ores, subsidising marginal high-cost production and special transport costs, and by using surplus electric-furnace capacity to produce carbon steel. Shortage of fuel was likely to limit the extent to which production, which was already at an almost record high level, could be expanded. An endeavour was being made to get increased supplies from producers in the U.S.A., Canada and on the Continent, but, owing to the great demand in America and the severe shortage on the Continent, he doubted whether much relief could be expected from imports before the second half of next year.

Asked about supplies for automobile manufacturers, Mr. Wilmot said that available supplies of steel must be allocated in such a way as to meet vital programmes and provide a balanced distribution among industry generally. Full consideration would be given to the claims of the motor industry.

MR. EDELMAN: Is the Minister fully aware that a restriction of steel supplies is likely to throw the whole motor industry out of gear, and to cut production to 50 per cent. capacity? Will he give the industry the necessary priority for full production?

MR. WILMOT: I cannot guarantee priority over all other users. The output of steel sheets is higher to-day than ever before, but there has been an enormous increase in demand, partly due to the substitution of steel for other materials which are in short supply.

PAT. No. 570997.



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Magnetic Separator

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SAVES LABOUR, IMPROVES CASTINGS

SOLE AGENTS :

THOS. W. WARD, LIMITED, Albion Works, Sheffield
TELEPHONE: 2691 TELEGRAMS: "FORWARD" SHEFFIELD

COMPANY RESULTS

(Figures for previous year in brackets.)

R. & J. Dick—Dividend of 20% (15%).

Hopkinsons—Interim dividend of 5% (same).

Manley & Regulus—Interim dividend of 5% (same).

Martin Bros. (Machinery)—Dividend of 12½% (same).

Carrier Engineering—Ordinary dividend of 35% (25%).

F. H. Lloyd & Company—Interim ordinary dividend of 3% (same).

Manganese Bronze & Brass—Interim dividend on the ordinary shares of 7½% (same).

Thos. W. Ward—Final dividend of 6½%, making 10% (same) and victory bonus of 2½% (nil).

Kayser, Ellison—Net profit for year ended June 30, £21,077 (£20,997); preference dividend, £3,150 (£3,000); ordinary dividend of 12½% (same); forward, £15,967 (£15,227).

Ductile Steels—Trading profit for the year ended June 30, after depreciation, £37,672 (£25,815); taxation, £19,500 (£14,000); preference dividend, £1,575 (£1,500); ordinary dividend of 20% (10%); to taxation reserve, nil (£3,000); special depreciation, £3,000 (£2,000); forward, £13,163 (£8,966).

Braithwaite & Company, Engineers—Net profit for the year ended March 31, including a dividend from Braithwaite & Company (India) and after providing for the estimated liability for taxes, £27,599 (£22,541); dividend of 7½% (same) on the ordinary shares; forward, £41,611 (£29,717).

Darwins—Net profit for the year ended March 31, after providing for and including taxation and depreciation, etc., £39,263 received in settlement of claim on the Iron and Steel Prices Fund for 1944-45, £35,327 (£15,873 after writing back provision for tax not required); to general reserve, £12,000 (nil); dividend of 6% (nil); forward, £23,580 (£22,538).

Herbert Morris—Net trading profit, after taxation, for the year ended July 31, £157,987 (£129,856); interest and dividends received, £4,155 (£372); transfer fees, £34 (£40); directors' fees, £400 (£450); depreciation, £19,125 (£12,635); final dividend of 15%, tax free (same), and bonus of 20%, tax free (same); to general reserve, £25,000 (£10,000); forward, £79,189 (£79,039).

Walter Somers—Net profit for the year ended March 31, after crediting E.P.T. recoverable, £16,000 (nil), reserve for previous years not required, £17,692 (nil), and after providing for income-tax, depreciation £13,404 (£14,534), debenture interests, etc., £20,997 (£16,363); dividend of 1s. per share (same); to general reserve, £10,000 (nil); forward, £45,551 (£44,323).

Kitchen & Wade—Trading profit to March 31 last, £51,308 (£105,671); to redundancy in drawings, jigs, etc., £5,000 (same); depreciation, etc., £4,605 (£4,105); E.P.T. recoverable, £13,200 (nil); dividends from subsidiary, £6,000 (same); tax and price repayments, £34,100 (£78,954); dividend of 25% (same); to general reserve, £5,000 (£4,191); forward, £7,577 (£5,461).

Cochran & Company, Annan—Profit for the year ended June 30, £40,588 (£61,493); doubtful debts recovered and recoverable, £1,631; taxation, £29,507 (£52,081); to general reserve, £5,000 (nil); war damage payments, £299 (same); ordinary dividend of 5%, tax free (4%, tax free); forward, £1,821 (£3,221, after writing off expenses of new share issue amounting to £1,962).

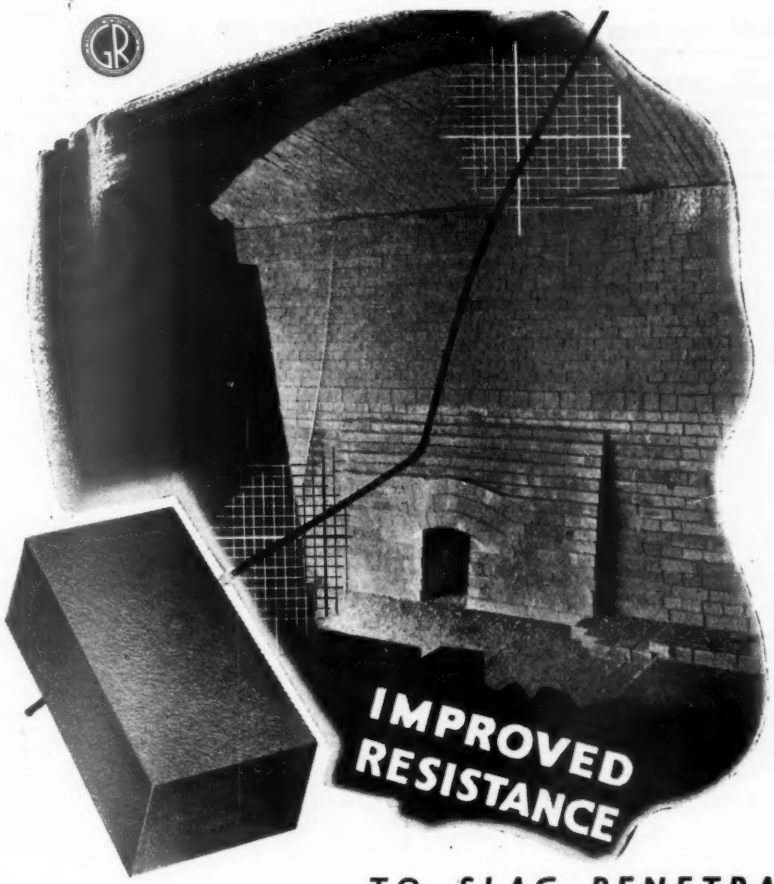
Parsons Marine Steam Turbine—Earnings, after depreciation, for year ended June 30, £172,837 (£44,628); other income, £22,018 (£22,229); taxation, £124,750 (£11,000); experimental pioneer and development work, £11,340 (£3,013); net profit, £57,365 (£51,444); dividend of 15% (same); to plant replacement, £25,000 (same); written off patent rights, etc., £15,953 (nil); forward, £14,789 (£24,522).

Smith's Stamping Works (Coventry)—Net profit for year ended August 3, including estimated E.P.T. recoverable of £94,500 (gross) and dividend of £10,312 (net) from subsidiary, Smith-Clayton Forge, £21,724 (£29,331, including estimated E.P.T. recoverable of £3,400 (net) and £7,500 (net) from subsidiary); ordinary dividend of 10% actual, less tax, and cash bonus of 2½% actual, less tax (against dividend 10% and bonus 5%).

Neepsend Steel & Tool—Net revenue for the year ended March 31, after taxation, £110,134 (£110,111); additional dividend of 4% (same) on the 6% preference shares, making 10% (same); to reserve for contingencies, £5,000 (same); to general reserve, £20,000 (same); also to reserve from E.P.T. provision no longer required, £150,000; final ordinary dividend of 9d. and a bonus of 1s. per 5s. stock unit, making 2s. 6d. (same); forward, £24,217 (£22,517).

Murex—Profit for the year ended June 30, £142,392 (£232,535); dividend from subsidiary company, free of tax, £30,000 (same); gross income from investments, £13,346 (£1,529); taxation recoverable (E.P.T. refund, less income-tax and N.D.C.), £125,000 (£55,000); depreciation, £106,661 (£102,892); net balance, £201,490 (£213,032); profit on sale of shares in associated company, £34,246 (nil); recovery of amount written off investment in former enemy-occupied territory, £35,754 (nil); to general reserve, £110,000 (£90,000); obsolescence, £50,000 (nil); ordinary dividends totalling 20%, less tax (same); forward, £126,332 (£126,680).

Renold & Coventry Chain Company—Trading profit for the year ended June 30, £182,875 (£202,930); E.P.T. recoverable, £65,000 (£16,000); provision for income-tax, £73,519 (£102,600); over-provision in respect of income-tax for the previous year, £10,000; E.P.T. recoverable in respect of deficiencies of subsidiaries in previous years, less income-tax, £85,000; to general reserve, £120,000 (£30,000); to capital reserve, £29,000 (£25,000); to contingencies account in respect of undistributed profits of subsidiaries for the year, less tax, £29,637 (nil); final dividend of 9½% (7%) and bonus of 2½% (same), making 15% (12½%); forward, £30,920 (£23,675).



TO SLAG PENETRATION

SLAG penetration of refractory materials normally accompanied by erosion, surface spalling, shrinkage, etc., is frequently responsible for the ultimate failure of refractories. To reduce the destructive effect of slag penetration, volume-stable, dense, low-porosity, low-permeability bricks, with the correct chemical composition, must be used. A characteristic of G.R. products is that they possess these necessary qualities and thus ensure minimum slag penetration. The services of G.R. engineers are available on request, to users, on the choice and application of refractories.

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POPPY DAY NOV. 9

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Raw Material Markets

IRON AND STEEL

Last month's production of pig-iron was the best of the year, but industrial requirements are steadily rising and the whole of the output has been fully absorbed. Consumers are receiving deliveries of authorised tonnages with reasonable promptitude, but few of the works have stocks as large as they are accustomed to carry, and it is hoped that it may be possible to put one or two more blast furnaces into operation in the near future. From both the light foundries and those engaged on heavy castings, current specifications are for bigger tonnages, and ironmasters are fully extended to keep pace with the demand.

Steelmakers are unable to meet in full the requisitions for semi-finished steel products and the failure of American and Canadian steelworks to maintain shipments to this country at promised levels has created difficulties, which, though they may be of no more than a temporary character, are none the less embarrassing. To some extent, the scarcity of blooms and billets has been mitigated by the use of defectives, crops, etc., but more material is urgently needed for the mills engaged on light sections, small bars, strip, etc.

Full employment for all the heavy rolling mills is assured to the end of the year and bookings as far ahead as Period II of 1947 are not uncommon. A rising home demand for plates, joists, sections, rails, etc., can only be fully satisfied by the refusal—however reluctant—of export orders, and the delayed execution of others. Parliamentary indications of curtailed authorisations for sheets have raised a hailstorm of protests and nobody seems to know what is going to happen. Forebodings of industrial dislocation are freely expressed, and however necessary it may be to review the bookings for sheet steel, the Control is certainly saddled with an invidious and unenviable task.

NON-FERROUS METALS

Consumption of the non-ferrous metals is holding up fairly well. Production is not excessive, but no undue difficulty is experienced in meeting the demand. At the same time, it cannot be claimed that the supply situation is easy, except, perhaps, in the case of aluminium.

Statistics issued by the British Non-Ferrous Metals Federation show that production of copper and copper-alloy products in the first nine months of the year registered a notable increase in some instances, but substantial declines in others. Output of castings, for example, was down compared with 1945.

Stocks of tin held by the Ministry of Supply at the end of September were 8,738 tons, compared with 9,267 tons at the beginning of the month, while stocks held by consumers at the end of September were calculated at 4,237 tons. Stocks of tin ore at the end of September also were lower than at the beginning of the month.

Prices of all non-ferrous metals show a firm tendency. It is unlikely that tin will be further increased in price, at least in the near future. Copper, however, is higher in America, the price having risen to 17¼ cents f.a.s. New York. On this basis, the price delivered to the British consumer would be well over £100. American consumers of zinc also now have to pay higher prices.

NEW COMPANIES

("Limited" is understood. Figures indicate capital. Names are of directors unless otherwise stated. Information compiled by Jordan & Sons, 116, Chancery Lane, London, W.C.2.)

Addison Tool & Instrument Company, 188, Warwick Road, Kensington, London, W.14. £5,000. R. A. E. C. Collins.

C. Firbank (Metal Merchants)—£2,000. S. M. Firbank, Greenways, Townsend Lane, Harpenden, Herts. G. H. Fletcher and J. W. Denton.

Parade Engineering Company, 1235a, Stratford Road, Hall Green, Birmingham—General engineers, etc. £4,000. R. H. Haynes and O. du Feu.

Medway Industries, 167, City Way, Rochester, Kent—Mechanical and general engineers, etc. £5,000. J. W. Carpenter, J. H. Lowe, and W. M. Newton.

Vannic Plating, London East Airport, Gravesend, Kent—Anodisers, electro-metallurgists, etc. £2,000. R. J. Cross, E. Louis, A. Ellson and H. Webb.

J. P. Griffiths, Cleveland Wharf, Lower Horseley Fields, Wolverhampton—Iron, steel and metal merchants, etc. £10,000. J. P. and R. P. Griffiths.

Henry & Galt, Sneddon Foundry, 16, New Sneddon Street, Paisley—Engineers, boilermakers, founders, etc. £19,500. T. Reid and R. D. Alexander.

"Unit" Metal Constructions Company. Summer House Road, Hurst Hill, nr. Bilston, Staffs—£2,500. J. L. Whitehouse, J. R. Hill and C. Cartwright.

Holmewood Engineering Company, 234, Wandsworth Road, London, S.W.8—£1,000. N. F. J. Holmewood, S. Fuggle, C. H. Wood, and S. G. Holmewood.

OBITUARY

MR. CLEMENT ROGERSON, joint managing director of the Blantyre Engineering Company, Limited, died recently.

MR. CHARLES A. IBBOTSON, chairman of G. & J. Hall, Limited, tool manufacturers, Sheffield, died on October 19, aged 71.

MR. FRANK WALLACE, the only Freeman of the Borough of Oldbury, died recently. He was secretary of the firm of William Hunt & Sons, The Brades, Limited, edge tool makers, Oldbury, in whose service he had been for 53 years. He was a member of the Oldbury Council for 40 years and was chairman on four occasions.